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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/599,726	06/23/2000	Shinichi Irisawa	Q59149	9228

7590 05/01/2002

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EXAMINER

ROY, SIKHA

ART UNIT PAPER NUMBER

2879

DATE MAILED: 05/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/599,726

Applicant(s)

IRISAWA ET AL.

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

ARC TUBE CAPABLE OF PREVENTING OCCURRENCE OF LEAK DUE TO
CRACKS AND MANUFACTURING METHOD THEREFOR

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,354,900 to Ohshima et al. in view of EP 609477 Jungst et al.

Ohshima et al. disclose (column 4 lines 37-51 Fig.1) an arc tube 2 configured by a quartz glass tube 4 having a discharge space 4a and pinch seal portions formed on two sides of the discharge space. A pair of tungsten electrodes (column 6 lines 59-67, column 7 line1) are pinch sealed by the quartz glass tube such that the leading ends of the electrodes project into the discharge space. The electrode rods and the quartz glass tube engage to each other by means of fine concave and convex portions formed

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on the interfaces therebetween and the contact area between the electrode rods and the quartz glass tube being increased the exfoliation between the electrode and quartz glass tube is prevented thereby causing less occurrence of cracks.

Claim 1 differs from Ohshima et al. in that Ohshima et al. do not exemplify the average roughness of the surface of the tungsten electrodes.

Jungst et al. in analogous art of high pressure lamp disclose (column 7 lines 13-16) the tungsten feed-through having surface roughness about 0.5 - 50 μ m which includes the range 3 μ m or smaller as claimed. It is to be noted (column 4 lines 35-40) that this small value of surface roughness of the electrode helps sintering the electrode with the quartz body without cracks being formed and hence enhancing reliable long-time gas-tightness .

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to specify the average surface roughness of the tungsten electrodes of Ohshima et al as taught by Jungst et al. This provides the benefit of sealing the electrode with quartz body without cracks being formed and hence enhancing reliable long-time gas-tightness.

Claim 4 recites the same limitations as of claim 1 and hence is rejected for the same reason.

Referring to claim 3, the method of manufacturing the arc tube recites the limitations same as claim 1 and the temperature of pinch-sealing thereby forming the pinch seals. Ohshima et al. disclose (column 5 lines 25-32) pinch-sealing is performed

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when electrode rod and quartz glass tube are sintered at a temperature range of 2000°C to 2300°C forming the pinch-seals.

Claim 5 recites the same limitations as of claim 3 and hence is rejected for the same reason.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,354,900 to Ohshima et al. in view of EP 609477 Jungst et al. and further in view of JP 07226185 to Masashi.

Regarding claim 2 Ohshima et al. and Jungst et al. do not disclose tungsten electrode subjected to electrolytic polishing process.

Masashi in relevant art of discharge lamps discloses (please see the Abstract and Constitution) the peripheral surface of tungsten bar is polished to provide a smooth outer peripheral surface. It is further disclosed that the polishing finish uniformizes the recesses and projections on the surface of the electrode helping firmly fix the electrode in the prescribed position.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the tungsten electrode rods of Ohshima et al. and Jungst et al. undergoing polishing in order to reduce the recesses and projections formed on the surface of the electrode and hence firmly fix the position.

Conclusion

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art references are cited to further show the state of the art with respect to manufacturing high pressure discharge lamps.

U. S. Patent 4,910,430 to Ito et al.

U. S. Patent 5,877,591 to Nagata et al.

U. S. Patent 6,249,086 to Honda et al.

U. S. Patent 6,342,764 to Nishimura et al.

JP 11067153 A to Irisawa et al.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879


ASHOK PATEL
PRIMARY EXAMINER